

## DRAWINGS ATTACHED



1 287 872

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### (54) IMPROVEMENTS IN OR RELATING TO APPARATUS FOR USE IN FILLING TANKERS

- (71) We, GENERAL ENGINEERING CONSULTANTS & CONTRACTORS LIMITED, a British Company of 52 St. George's Road, Gants Hill, Ilford, Essex, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—
- 10 This invention relates to apparatus for use in filling rail and road tankers with oil or other liquids. Fast filling of a tanker gives rise to the problem that gases are thereby displaced from the tanker which tends to flood the surrounding territory with consequent distasteful or even harmful results.
- 15 According to the present invention a tank filling apparatus comprises an input pipe and a gas escape pipe, said pipes being suitable for entry into a tank manhole and means expansible by inflation for closing the space between the rim of a tank manhole and said pipes, or between the said rim and the outermost pipe when one pipe is within the other e.g. the inlet pipe may be within the escape pipe with escape space between them. The expansible means may then be an elastic sleeve surrounding the outer pipe and fixed to it at the upper and lower edges of the sleeve in an airtight manner means being provided for inflating the sleeve.
- 20 The expansible means may alternatively be in the form of a tube or sleeve with double walls surrounding the outer pipe (when one pipe is within the other) or surrounding both pipes (when they are side by side) one or each of these walls being elastic, e.g. of rubber, and provided with an inlet tube or nozzle which can be connected to a source of compressed air or other fluid under pressure.
- 25 The expansible means may be clamped to the pipe or pipes.
- 30 The pipes may be dipped into the filling hatch to a suitable distance which may be indicated by a mark on the outer pipe (when one pipe is within the other) or located by an abutment on the outer pipe.
- 35 The expansible means is then inflated to press against the filling hatch whereupon the tanker can be filled rapidly and the gas content of the tanker can escape through the escape pipe and may be led away to any required position for safe disposal.
- 40 If desired an optical or electro-acoustic device may be provided to indicate when the tanker has been sufficiently filled.
- 45 A device made in accordance with the invention is illustrated in the accompanying diagrammatic drawings wherein:
- 50 Figure 1 is a sectional view of a tank and an apparatus made in accordance with the invention; and
- 55 Figure 2 is an enlarged view of part of Figure 1 showing additional features.
- 60 A tank 10 is shown in section. A filling pipe 11 is located within a vapour exhaust pipe 12. The pipe 12 surrounds the tube 11 and is spaced from it. An inflatable rubber sleeve 13 is fastened at spaced apart positions to the pipe 12. The sleeve 13 is shown inflated by means of a nozzle 16 (Figure 2) to close the space between the pipe 12 and the manhole 14 of the tank during filling so that vapours from the tank are exhausted through a port 15 in the pipe 12.
- 65 In order to indicate when the tank has been filled there is provided a rod 19 movable in guides 21 and carrying a float 18 and an indicating projection 20 which can be observed through an observation window 17 in the outer pipe.
- 70 The pipes 11, 12 may be made of any material suitable for dealing with the liquid concerned e.g. polyvinyl chloride, or steel e.g. stainless steel. The sleeve 13 may be fixed to the pipe 12 by a tight fit, clamping bands, adhesive vulcanizing or other means.
- 75 It is to be noted that the pipe 11 extends deeper into the tank than the pipe 12 so
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- 85
- 90

that liquid will not pass into the pipe 12 until the end of the filling operation.

A spider 22 may be provided to space the lower ends of the pipes apart.

5 WHAT WE CLAIM IS:—

1. A tank filling apparatus comprising an input pipe and a gas escape pipe, said pipes being suitable for entry into a tank manhole, and means expansible by inflation  
10 for closing the space between the rim of a tank manhole and said pipes, or between the said rim and the outermost pipe when one pipe is within the other.

2. A tank filling apparatus as claimed in  
15 claim 1 wherein one of said pipes is located within the other.

3. A tank filling apparatus as claimed in  
20 claim 2 wherein the expansible means is an elastic sleeve surrounding the outer pipe and fixed to it at the upper and lower edges of the sleeve in an airtight manner, the apparatus also having means for inflating the sleeve.

4. A tank filling apparatus as claimed in  
25 claim 3 wherein the sleeve is a double layer sleeve and the means for inflating it leads to the space between the layers.

5. A tank filling apparatus as claimed in  
30 claim 2 having a float indicator fitted between the pipes and visible through a transparent window fitted into the outer pipe.

6. A tank filling apparatus as claimed in  
35 any of claims 1 to 4 having electrically operated means for indicating when the tank is sufficiently filled.

7. A tank filling apparatus substantially as described with reference to the accompanying drawings.

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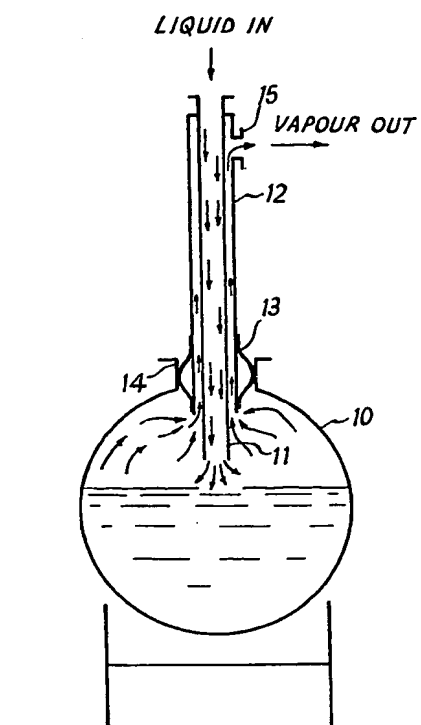
*FIG. 1.*

FIG. 2

